ROYAL HOLLOWAY
University of London

PROGRAMME SPECIFICATION

This document describes the **Master of Science, Postgraduate Diploma and Postgraduate Certificate in Engineering Management** This specification is valid for new entrants from **September 2017**.

The aims of the programme are:

- To allow students to identify and apply appropriate high level strategic management finance and accountancy tools, the formulation and execution of business strategy, product and process innovation management and technology strategy across the engineering and manufacturing industries.
- To enable students to develop a critical, selective and confident approach to the integration of knowledge domains and practical skills to finance, manage and implement business strategic objectives.
- To provide the necessary knowledge and understanding of the major forces influencing all engineering and manufacturing businesses today, namely the management of business ethics, corporate social responsibility and sustainability.
- To provide training in business research techniques and methods in the field of study;
- To provide the analytical skills and confidence for the writing of insightful, professional business reports to senior management to aid strategic planning and implementation in the organisation.
- To foster an independent learning ability and an enquiring mind required for continuing professional development.
- To equip students with an impressive range of sector-specific practical tools and skills that are applicable n industry alongside wider transferable skills.

The Programme will recruit students with a first degree in Science, Engineering, Technology or Management fields of study, who wish to find employment in a range of management roles within the engineering sector, particularly in those markets which are or are likely to experience rapid expansion over the coming years. The programme provides students with essential knowledge, skills and tools to enter into and build successful senior management careers in engineering management, right across the engineering and manufacturing sectors, science-based industries, and high tech manufacturing.

The Master's programme is delivered over one year of full-time study (52 weeks) and assumes that students will be resident in the UK for this period. As the programme assumes no prior familiarity with the diversity of systems around the world, it includes some elements which are introductory. Students study alongside those working on programmes on project management, supply chain management and media management.

Further information

This document provides a summary of the main features of the programme(s), and of the outcomes which a student might reasonably be expected to achieve if full advantage is taken of the learning opportunities provided. Further information is contained in the College prospectus, the College Regulations and in various handbooks issued to students upon arrival. Whilst Royal Holloway keeps all its information for prospective applicants and students under review, programmes and the availability of individual courses are necessarily subject to change at any time, and prospective applicants are therefore

advised to seek confirmation of any factors which might affect their decision to follow a specific programme. In turn, Royal Holloway will inform applicants and students as soon as is practicable of any substantial changes which might affect their studies.

Learning outcomes

In general terms, the programme provides opportunities for students to develop and demonstrate the following learning outcomes:

Knowledge and understanding

- Fully understand and be able to apply the Key Technology Classification Tools, ,to develop a technology strategy for a corporation to bring a new technology-based product to the market on time and within financial budgetary constraints to meet business objectives;
- Full knowledge of the characteristics and trends of the 'Materials Revolution' and the resultant development of a range of advanced materials across all engineering and manufacturing sectors;
- Knowledge and understanding of the Tools and Principles of IP Protection and be able to apply them to manage the Intellectual Property portfolio of the corporation to meet its business objectives;
- Fully understand the nature and characteristics of the scientific convergence of nanoscience and nanotechnology and be able to apply it to develop corporate R&D strategies in industry ;
- Fully understand the Principles, rules, norms and regulatory framework for Corporate Governance and senior management structures and behaviour in engineering corporations;
- Fully understand and be able to apply Business Ethics programmes to suit all levels and ranges of operations in engineering and manufacturing companies, in order to meet the stringent regulations and codes of conduct required and expected globally in the 21st Century;
- Identify and implement Corporate Social Responsibility(CSR) strategies and programmes in the global operations of engineering corporations in different economies and societies;
- Application of an in-depth understanding of the critically important concept of sustainability, and its relevance to all industries and government policies subject to different regulatory frameworks and policies;
- Fully understand the disruptive technology analytical framework, and the strategic implications of disruptive technologies for the leading incumbent corporations and new entrants in all engineering and manufacturing sectors and consumer goods industries;
- Fully understand the methods and tools of Technology Integration R&D teams integrating rapid technological advance, new product development and the ability to enter markets on time with products robust to market context;
- Obtain the Prince 2 professional qualification and apply this to their understanding of engineering management;
- Demonstrate the application of the nature and characteristics, principles and tools of Lean Production, the Toyota Production Management System, Total Quality Management and Kaizen continuous improvement techniques in engineering and manufacturing industries;
- Utilise the tools, concepts and theories of Strategic Management, Strategic Planning, Finance and Accountancy and Organisational Design in modern industrial corporations in engineering and manufacturing;
- Practical understanding of the engineering practices used in the design and manufacturing in sustainable power generation and frontier technologies;
- A good understanding and knowledge of issues facing this and future generations, such as green energy provision and the use of futuristic engineering technologies, to enhance and develop the understanding of the world of tomorrow;

Skills and other attributes

- the ability to critically develop their own approach and practice in the fields of engineering management;
- the ability to analyse , critically interpret and utilise software tools, empirical findings and data;*
- the ability to conduct management and business research independently at an advanced level using traditional and electronic resources;

- The ability to further develop skills of reflection on reading and learning, and skills in information handling and retrieval;*
- The ability to independently present logical and coherent written and oral arguments of varying lengths;*
- The ability to acquire and use advanced software skills in MSProject and @Risk Financial Modelling;*
- the ability to organise and interpret complex information in a structured and systematic way, and to comprehend and develop sophisticated concepts;*
- enhanced interpersonal skills and collaborative teamwork, involving recognising and respecting the viewpoints, and interacting constructively with other people;*
- Enhanced time management and organisational skills including working to deadlines, prioritising tasks, organising work-time;*

* transferable skills

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Teaching, learning and assessment

Teaching and learning is mostly by means of formal but interactive lectures, seminar discussions, oral presentations, in-class and engineering management related problem-solving exercises, guided independent research, coursework essays, and a dissertation on management in engineering and related practice. The basic strategies are to nurture the interest and enthusiasm of the students for the field, to embed the student in frontier knowledge in the field, to develop the students' critical and communication skills and to develop analytical, research, creativity and innovative problem-solving skills. Assessment of knowledge and understanding is typically made by coursework essays, examinations and a dissertation which integrates and crystallises knowledge and understanding across the domains in the field to attain business and/or analytical objectives. Full details of the assessments for individual courses can be obtained from the Department of Electronic Engineering

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Details of the programme structure(s)

Each programme consists of 9 mandatory taught courses (to the value of 120 Credits) and dissertation (worth 60 credits), comprising of 180 credits in total. There is also a strongly advisable workshop which will provide a Prince2 qualification. The programme will also include a number of, Centre wide, external-speaker seminars. Students are assessed and examined in the credit bearing courses only. The programme also includes elements which are **mandatory** but are non-credit bearing and any assessment for these elements does not count towards the degree average (these are listed at the end of this section). A brief outline of the programme is shown below. The credit values for individual courses are indicated in brackets. Students on the Master of Science in Engineering Management programme must take the following mandatory courses:

The programme structure for the PGDip is as below, with the exception that students will not undertake the dissertation, while for the PG Cert students are required to take courses worth only 60 credits.

Students must take the following ***mandatory*** courses:

i. EE5000: Dissertation (60 credits) [non-condonable]
ii. PM5001: Introduction to Project Management (10 credits) [condonable]
iii. PM5002: Operations and Quality Management (10 credits) [condonable]
iv. PM5004:International Strategic and Technology Management (20 credits) [condonable]
v. PM5007: Corporate Governance, Ethics and Sustainability (10 credits) [condonable]
vi. PM5011 International accounting and finance (10 credits) [condonable]
vii. PM5020: Business Research Methods (10 credits) [condonable]
viii. PM5031: Managing People and Organisations (10 credits) [condonable]

ix. EE5301: Frontier Technologies – from concept to commercialisation (20 Credits) [condonable]
x. EE5302: Sustainable power generation (20 credits) [condonable]

Prince2 Project Management certification

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Progression and award requirements
Progression throughout the year/s is monitored through performance in oral presentations, contributions to seminar discussion and coursework.

Please note that if you hold a Tier 4 (General) Student Visa and you choose to leave (or are required to leave because of non-progression) or complete early (before the course end date stated on your CAS), then this will be reported to UKVI.

To pass the programme a student must achieve an overall weighted average of at least 50.00%, with no mark in any element which counts towards the final assessment falling below 50%. Failure marks between 40-49% can be condoned in courses which constitute up to a maximum of 40 credits , provided that the overall weighted average is at least 50.00%, but a failure mark (i.e. below 50%) in the dissertation cannot be condoned.

The Master's degree with Merit may be awarded if a student achieves an overall weighted average of 60.00% or above, with no mark in any module which counts towards the final assessment falling below 50%. A Merit will not normally be awarded if a student re-sits or re-takes any module of the programme.

The Master's degree with Distinction may be awarded if a student achieves an overall weighted average of 70.00% or above, with no mark in any module which counts towards the final assessment falling below 50%. A Distinction will not normally be awarded if a student re-sits or re-takes any module of the programme.

The **Postgraduate Diploma** may be awarded if a student achieves an overall weighted average of at least 50.00%, with no mark in any taught module which counts towards the final assessment falling below 50% *and* has either chosen not to proceed to the dissertation, or has failed the dissertation on either the first or second attempt. Failure marks in the region 40-49% are not usually condoned for the award of a Postgraduate Diploma, but if they are, such condoned fails would be in modules which do not constitute more than 40 credits.

The Postgraduate Diploma with Merit may be awarded if a student achieves an overall weighted average of 60.00% or above, with no mark in any module which counts towards the final assessment falling below 50%. A Merit will not normally be awarded if a student re-sits or re-takes any module of the programme.

The Postgraduate Diploma with Distinction may be awarded if a student achieves an overall weighted average of 70.00% or above, with no mark in any module which counts towards the final assessment falling below 50%. A Distinction will not normally be awarded if a student re-sits or re-takes any module of the programme.

The **Postgraduate Certificate** may be awarded if a student achieves an overall weighted average of at least 50.00%, with no mark in any taught module which counts towards the final assessment falling below 50%. Failure marks in the region 40-49% are not usually condoned for the award of a Postgraduate Certificate.

The Postgraduate Certificate with Merit may be awarded if a student achieves an overall weighted average of 60.00% or above, with no mark in any module which counts towards the final assessment falling below 50%. A Merit will not normally be awarded if a student re-sits or re-takes any -module of the programme.

The Postgraduate Certificate with Distinction may be awarded if a student achieves an overall weighted average of 70.00% or above, with no mark in any module which counts towards the final assessment falling below 50%. A Distinction will not normally be awarded if a student re-sits or re-takes any module.

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Student support and guidance

- The Programme Director has academic oversight of the Programme, is available to advise on matters of course or programme registration, programme structures and pathway choices,
- All students are allocated a Personal Advisor, with whom they meet at least once a term, and more regularly if required, to discuss all matters relating to their programme and for pastoral support.
- All students are given a Supervisor who guides them through the dissertation process between February and August of each academic year.
- All staff are available and accessible through an office-hour system.
- Representation on the Staff-Student Committee.
- Detailed MSc handbook and course booklets.
- Extensive supporting materials and learning resources in College and University libraries, as well as the Computer Centre.
- Open access computers at Egham.
- Royal Holloway VPN registration.
- College Careers Service and Departmental Employability Lead officer.
- Access to all College and University support services, including Student Counselling Service, Health Centre, Students' Union and students with additional learning needs also have access to Disability and Dyslexia Services (DDS).

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Admission requirements

For details of admissions requirements please refer to the Course Finder.

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Further learning and career opportunities

Graduates can successfully enter and progress their careers in a wide range of positions in several industries, make substantial contributions to multidisciplinary teams which strategically manage domestic and international business operations, R&D and technology development ,supply chains, finance, technology acquisition, amongst other projects, thereby progressing higher up in the organisation and into senior management positions of the firm or change career paths across industries, government and NGOs. The MSc Engineering Management Programme is designed to prepare students for successful careers in institutions and businesses in, amongst others:

- Electronics, Mobile Communication and Computing
- Manufacturing
- Construction
- Government departments
- Automotive,
- Heavy and Light Engineering
- High –tech Materials and Components Start-Ups
- Minerals, Oil &Gas
- Shipping
- Aerospace

- International Aid, Disaster Relief and NGOs

For other graduates, completing an MSc is the precursor to embarking on research, ultimately leading to a PhD. For more details on further learning and career opportunities please refer to the Careers Service.

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Indicators of quality and standards

Royal Holloway's position as one of the UK's leading research-intensive institutions was confirmed by the results of the most recent Research Excellence Framework (REF 2014) conducted by the Higher Education Funding Council (HEFCE). The scoring system for the REF 2014 measures research quality in four categories, with the top score of 4* indicating quality that is world-leading and of the highest standards in terms of originality, significance and rigour and 3* indicating research that is internationally excellent. 81% of the College's research profile was deemed to be within the 4* or 3* categories, an increase of over 20% since 2008. This results for the quality of our research outputs placed Royal Holloway 15th in the UK based on an overall Grade Point Average (GPA) score and 20th in the UK for 4* and 3* research.

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List of programmes with details of awards, teaching arrangements and accreditation

The programmes are taught entirely by staff at Royal Holloway, University of London, and the Masters leads to an award of the University of London. The Postgraduate Diploma and Postgraduate Certificate lead to an award of Royal Holloway and Bedford New College. Programmes in The Centre for Professional Studies are not subject to accreditation by a professional body. The Banner programme codes are given in parentheses.

MSc Engineering Management (3082)

Postgraduate Diploma in Engineering Management

PG Diploma in Engineering Management (3083)

Postgraduate Certificate in Engineering Management

PG Certificate in Engineering Management (3084)

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